KANEKEVICH, M. J.

CA

PROCESSES AND PROPERTIES INDEX

Immunobiological state of scalded patients immediately after the accident. M. I. Kanekevich. *VM. rapid* (Ukraine) 1959, No. 8, 17-23 (W-65) patients with burns, 80% showed a complete absence of agglutination, 16% showed a pos. reaction (diln. 1:50), and 4% showed a pos. reaction (diln. 1:100). Complete absence of complement was found in 22% of the patients, a low titer (0.3-0.1) in 49% and a 0.1 0.04 titer in 29% of the patients. A low phagocyte no. (0 5.0) was exhibited by 43% of the patients, 52.5% had a phagocyte no. of 5 10, and only 4.5% showed phagocyte nos. above 10. Twenty-six % of the subjects had a low opsonic index (up to 0.5), 63% had an opsonic index of 0.6 1.0, and only 11% had an opsonic index above 1.0. It is suggested that rational therapy, among other things, should attempt to stimulate immunogenesis in patients with severe burns. S. A. C.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

KANKEVICH, M.I., dotsent (Khar'kov, ul. Dzerzhinskogo, 97, kv. 35)

Gastric neurinomas. Vest. khir. 74 no.5:50-53 Jl-Ag '54. (MIRA 7:10)

1. Iz khirurgicheskogo otdeleniya (zav. prof. A.V.Gabay) kliniki
Ukrainskogo tsentral'nogo nauchno-issledovatel'skogo instituta
rentgenologii, radiologii i onkologii.
        (STOMACH, neoplasms,
            neurilemmoma)
        (NEURILEMMOMA,
            stomach)

KANKEVICH, M.I., dotsent

Trichobezoars of the stomach. Sov.med. 20 no.12:57-59 D '56.
(MLM 10:1)

1. Iz onkologicheskogo otdeleniya Lipetskoy oblastnoy bol'nitsy
(glavnyy vrach F.D.Beresin)
    (BEZOARS
        trychobezoars of stomach)

KANEKEVICH, M.I., dotsent (Lipetsk (obl.), ul. Suvorova, d.1. kv.15)

Tuberculosis of the stomach. Vest.khir. 80 no.4:118-121 Ap'58
(MIRA 11:5)

1. Iz onkologicheskogo otdeleniya (zav. - dotsent M.I. Kanekevich)
Lipetskoy oblastnoy bol'nitsy (gl.vrach - F.D. Boronin).
(TUBERCULOSIS, GASTROINTESTINAL,
stomach (Rus))

KANEKEVICH, M.I.

Clinical picture of lipoma of the stomach. Vop. onk. 5 no.12:
725-727 '59.   (MIRA 13:12)
          (STOMACH—TUMORS)

KANSKEVICH, M.I., dots.

Supernumary pancreas in the stomach wall. Khirurgiia 35
no.6:134-137 Je '59.   (MIRA 12:8)

1. Iz onkologicheskogo otdeleniya (zav. - dots. M.I.Kanekevich)
Lipetskoy oblastnoy bol'nitsy (glavnyy vrach F.D.Boronin).
          (PANCREAS, abnorm.
                    supernumary pancreas in stomach wall, surg.
                    (Rus))
          (STOMACH
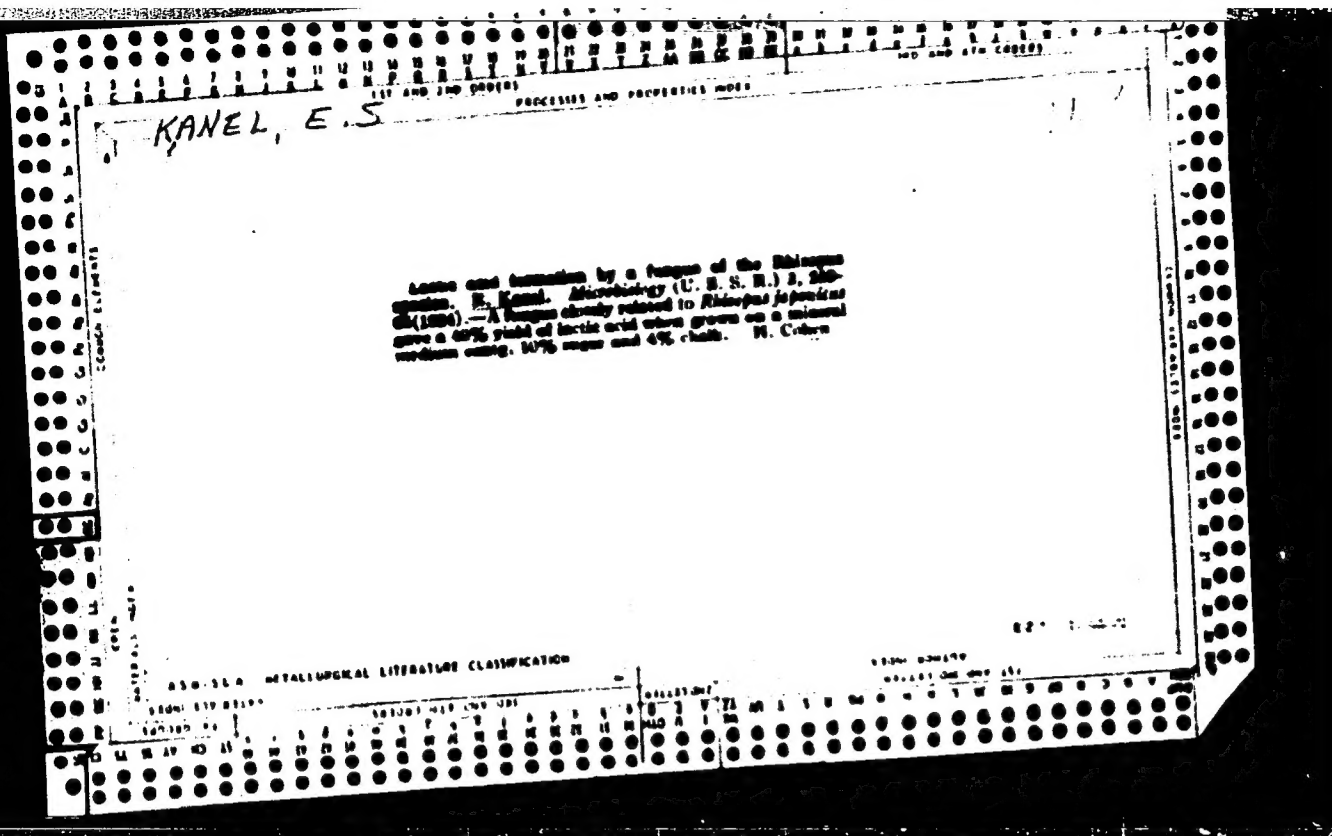   same)

KANEKEVICH, M.I., dotsent (Lipetsk)

Accessory pancreas in the wall of the stomach. Klin.med. 37 no.11:
82-85 N '59.   (MIRA 13:3)

1. Iz onkologicheskogo otdeleniya (zaveduyushchiy - dotsent M.I.
Kanekevich) Lipetskoy oblastnoy bol'nitsy (glavnyy vrach P.D. Boronin).
          (PANCREAS abnorm.)

KANEKO, Kenta

Breach in the American fortress. Vsem. prof. dvizh. no.8/9:18-22
Ag-S '60.
(MIRA 13:9)

1. Zaveduyushchiy mezhdunarodnym otdelom Federatsii profsoyuznov
metallicheskoy i mashinostroitel'noy promyshlennosti Yaponii.
(Japan--Politics and government)

KANEL, E.S

Lactic acid formation by a fungus of the Rhizopus species. E. Kanel. Microbiology (U. S. S. R.) 3, 310 (1934).—A fungus closely related to Rhizopus japonicus gave a 65% yield of lactic acid when grown on a mineral medium using 10% sugar and 4% chalk.   N. Cohen

KANEL, E. S.

CA

PROCESSES AND PROPERTIES INDEX

The use of new raw materials for the production of "liquid yeast." E. S. Kanel and M. I. Ratner. Pishchevaya Prom. 1940, No. 11, 27-8.—It is shown that a mixt. of grain flour and sunflower meal is as effective a substrate for the production of "liquid yeast" to be used in bread baking as is grain flour alone. B. Gottlieb

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ALEKSANDROVA, M. (Riga); INDULEN, A.(Riga); KALNIN', B. [Kalnina,B.] (Riga); KANEL', I. [Kanele, I.] (Riga); KONDRASHOVA, M. (Riga); KUKAIN, R. [Kukainis,R.] (Riga)

Virological and serologic studies in connection with the inoculation with live vaccine against poliomyelitis in Latvia; a preliminary report. Vestis Latv ak no.2:149-152 '60.   (EEAI 10:1)

1. Akademiya nauk Latviyskoy SSR, Institut mikrobiologii.
        (LATVIA--POLIOMYELITIS)

ALEKSANDROVA, M.; GINTER, V.[Gintere, V.]; INDULEN, M.[Insulena, M.];
   KANEL', I.[Kanele, I.]; KONDRASHOVA, M.; KUKAYN, G.[Kukaine, G.]

   Virological and serologic studies of live vaccine against polio-
   myelitis. Report II. Vestis Latv ak no.6:153-158 '60.
                                            (KEAI 10:9)

      (POLIOMYELITIS)   (VACCINES AND VACCINATION)

INDULEN, M. [Indulena, M.]; KANEL', I. [Kanele, I.]

Etiological role of enteroviruses in intestinal disorders
in children. Vestis Latv ak no.6:115-118 '62.

1. Institut mikrobiologii AN Latviyskoy SSR.

KANEL', I. [Kanele, I.]

Effectiveness of the immunization with live vaccine of children previously vaccinated with Salk vaccine. Vestis Latv ak no.7:107-110 '62.

1. Institut mikrobiologii AN Latviyskoy SSR.

KUKAYN, R. [Kukaine, R.]; INDULEN, M. [Induléna, M.]; KANEL', I. [Kanele, I.];
KONDRASHOVA, M.; KALNINYA, B. [Kalnina, V.]; VOLRAT, A. [Volrate, A.];
FELDMAN, G. [Feldmane, G.]; NAGAYEVA, L.; PAVLOVA, M.; POPOVA, V.

Characteristics of the tuberculin tests in children inocculated
during early infancy with peroral BCG vaccine and live poliomyelitis
vaccine. Vestis Latv ak no.7:115-117 '62.

1. Institut mikrobiologii AN Latviyskoy SSR.

KANEL I.A.

BERZIN', V.K.; OLINSKAYA, Ye.V.; KANEL', I.A.

Result of a mass Schick's test in determining immunity to diphtheria in children in Riga during 1951. Zhur.mikrobiol.epid. i immun. no.8: 76-79 Ag '54. (MLRA 7:9)

1. Iz Rizhskogo meditsinskogo instituta (dir. prov. E.M.Burtniek) i Rizhskoy gorodskoy sanitarno-epidemiologicheskoy stantsii (glavnyy vrach M.M.Popova)
    (DIPHTHERIA, immunology,
    Schick test, results in Latvia)

YA____', I.A. C-nd Med Sci—(diss' "Changes in th_ l_st_mi_l flore of the inte_tines in certain infectious dis___ _f children." Rig, 195_. 14 pp (Acad Sci La_SSR. Inst of Ex_ _i_ _n_l M M_d _), 200 __ies (__,31-5_, 1_7)

—/_/—

INDULEN, M.K. [Indulens, M.]; KANEL', I.A. [Kanelis, I.]

Study of the population of Riga for the presence in the blood of antibodies to the ECHO group of viruses. Vop.virus 7 no.5:547–551 S-O '62.
(MIRA 15:11)

1. Institut mikrobiologii AN Latviyskoy SSR, Riga.
(ECHO VIRUSES)
(RIGA—BLOOD—EXAMINATION)
(ANTIGENS AND ANTIBODIES)

KANEL', L. V.
25891

Obzor Dokladov Po Tuberkulezu Na
Sele. (Na sessii In-Ta Tuberkuleza
Akad. Med Nauk SSSR. Dek., 1947, G.)
Byulleten' In-Ta Tuberkuleza Akad. Med. Nauk.
SSSR, 1948, No. 1, s. 38-44

SO: LETOPIS NO. 3 0, 19l8

KANEL', L. V.

Tuberculosis

"Tuberculosis." F. A. Mikhailov; Reviewed by L. V. Kanel'; Probl. tub. no. 1, 1952.

Monthly List of Russian Accessions, Library of Congress, May 1952. UNCLASSIFIED.

L 21223-66 EWT(m)/EWP(t)   IJP(c), JD
ACC NR: AP6003817   SOURCE CODE: UR/0181/66/008/001/0283/0234

AUTHORS: Kanel', O. M.; Kraftmakher, Ya. A.

61
59
B

ORG: none

TITLE: Formation of vacancies in zirconium

SOURCE: Fizika tverdogo tela, v. 8, no. 1, 1966, 283-284

TOPIC TAGS: zirconium, crystal lattice vacancy, photoresistance, emissivity, specific heat

ABSTRACT: To determine the energy of formation and concentration of vacancies in zirconium, the authors measured its specific heat high temperatures. Zirconium iodide samples were used in the form of ribbons 0.1 mm thick, 0.5 -- 1 mm wide, and up to 100 mm long. The measurements were made by a modulation method described earlier (PMTF, no. 5, 176, 1962), except that the amplitude of the tempera- ture oscillations was determined from oscillations of its luminosity with the aid of a photoresistance. The sample temperature was cal- culated from the power radiated on the basis of data on total

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L 21223-66
ACC NR: AP6003817   2

emissivity of zirconium at high temperatures. The measurements were
made in vacuum (2 x 10^{-6} mm Hg), and the temperature modulation fre-
quency was approximately 30 cps. The specific heat was measured in
the temperature interval 1300 -- 200K. At temperatures above 1500°,
an increase is observed in the specific heat, connected with the for-
mation of vacancies. It is deduced from the experiments that the
average energy of vacancy formation is 1.75 ev, accurate to 0.2 ev.
The increase in specific heat as a result of vacancy formation is
0.8 cal/g-at-deg at 200K. The concentration of the vacancies reaches
0.7% at the melting temperature. The results obtained do not con-
tradict earlier data on self-diffusion in zirconium. The authors
thank B. G. Strelkov for interest in the work and valuable remarks,
and A. I. Baykov for supplying the samples. Orig. art. has: 1 figure.

SUB CODE: 20/   SUBM DATE: 09Aug65/ ORIG REF: 004/ OTH REF: 002

Card   2/2

KANEL', Ya.I. (Moskva)

Stabilization of solutions of the Cauchy problem for equations in
the theory of combustion. Mat. sbor. 59 (dop.):245-288 '62.
(MIRA 16:6)

(Boundary value problems) (Differential equations)

S/020/63/149/002/027/028
B101/B144

AUTHOR: Kanel', Ya. I.

TITLE: Stationary solution of the system of equations for the theory
of combustion

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 149, no. 2, 1963, 367 - 369

TEXT: For the unidimensional combustion process of a gas mixture we may
write: $\partial u/\partial t - \partial^2 u/\partial x^2 = f(u)v$; $\partial v/\partial t - \lambda \partial^2 v/\partial x^2 = -f(u)v$ (1), where
u is the temperature of the mixture; v the concentration of the active
agent; $f(u)v$ the reaction rate; $f(u) = 0$, if $u < \alpha$; $f(u) > 0$, if $u > \alpha$;
$\lambda = D\rho c/k$; D is the coefficient of diffusion; ρ is the density of the
substance; c is its specific heat; k is the coefficient of thermal con-
ductivity. The stationary solution of (1) has the shape:
$u = \tilde{u}(x + mt + C)$; $v = \tilde{v}(x + mt + C)$ (2), where $m = \text{const} \geq 0$;
C = const; $\tilde{u}(-\infty) = u_- < \alpha$; $\tilde{u}(+\infty) = u_+ > \alpha$; $\tilde{v}(-\infty) = v_- > 0$; $\tilde{v}(+\infty) = 0$.

It is proved that a stationary solution of (1) exists at arbitrary $\lambda > 0$
and that the solution at $0 < \lambda < 1$ is unique. By inserting $\xi = x + mt$;
$du/d\xi = p$, the following system is obtained: $dp/du = m - f(u)v/p$;

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Stationary solution of the ...

$dv/du = (m/\lambda p)(u + v - u_+) - 1/\lambda$ (4). The following conditions are valid: $v\big|_{u=u_-} = v_-$; $v\big|_{u=u_+} = 0$; $P\big|_{u=u_+} = 0$ (5). The second equation of the system (4) has the solution: $v(u,m) =$

$$v(u,m) = u_+ - u + (1/\lambda - 1) \int_u^{u_+} \exp\left[-(m/\lambda) \int_u^{u_2} du_1/p(u_1,m)\right] du_2 \quad (6).$$

Therefrom it follows that with $u < u_+$ in the neighborhood of u_+ the following inequalities are valid: $u_+ - u < v < (1/\lambda)(u_+ - u)$ with $\lambda < 1$; $(1/\lambda)(u_+ - u) < v < u_+ - u$ with $\lambda > 1$; $p_1(u,m) < p_2(u,m)$ with $\lambda < 1$, and $p_2(u,m) < p(u,m) < p_1(u,m)$ with $\lambda > 1$. Thus the solution of $p = p(u,m)$, $v = v(u,m)$ is valid for the entire interval $u_- < u < u_+$. For $\lambda < 1$, the value of m_o is unique.

PRESENTED: September 6, 1962, by Ya. B. Zel'dovich, Academician

SUBMITTED: April 11, 1962

Card 2/2

L 13002-63   EWT(d)/FCC(w)/BDS   AFFTC   IJP(C)
                                              8/0042/63/018/002/0127/0134
ACCESSION NR: AP5001419

51

AUTHOR: Kanel', Ya. I.

TITLE: Stabilization of solutions of the Cauchy problem for linear parabolic
equations

SOURCE: Uspekhi matematicheskikh nauk, v. 18, no. 2, 1963, 127-134

TOPIC TAGS: stabilization, Cauchy problem, Markov process equation, parabolic
partial differential equation

ABSTRACT: Consider the solution $u(x,t)$ of the Cauchy problem in the half-plane t
greater than 0 for the equations (1) and (2) in the enclosure. The author studies
the behavior of $u(x,t)$ as t becomes infinite. He assumes that the function after
(2) in the enclosure is continuous and bounded in the half-plane t greater than or
equal to 0. With no further restrictions, the function u sub 0 of x is assumed
measurable and bounded. The basic result of this paper is given in theorem 1 (see
the enclosure). Orig. art. has: 20 formulas.

ASSOCIATION: none

SUBMITTED: 15Feb61   DATE ACQ: 27May63   ENCL: 02
                           NO REF SOV: 012   OTHER: 002
SUB CODE: 00

Card 1/2/

[illegible] $\overline{xy}r(\pi)/zpF(\cdot)/T$ Pr-l;   sgn(dn)/Aumc(b)/sgn(a)/AR4L/ASD(a)-5/

[illegible]

[illegible] of solutions [illegible]

[illegible]ons

[illegible] Matematicheskiy sbornik, v. 65, no. 1, [illegible]

[illegible] [illegible] flame velocity

[illegible]

[illegible] An infinitely long pipe is filled with [illegible] a portion [illegible]

[illegible] of length c c. The author studies [illegible]
[illegible] he studies

$$\frac{\partial u}{\partial t} - \frac{\partial^2 u}{\partial x^2} = F(u) \tag{1}$$

subject to

$$u\,|_{t=0} = u_0(x) \tag{2}$$

Here $F(u)$ is a sufficiently smooth function and
$$F(u) = 0 \text{ for } 0 < u < a < 1, \ F(1) = 0 \ F(u) > 0 \text{ for } a < u < 1 \tag{3}$$

$u(t,x)$ corresponds to the temperature [illegible]
The author shows that one can find numbers l_1 and l_2 such that $u(x,t) \to 0$ a.

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L 15155-65
ACCESSION NR: AP4049381

... → ... if $l < l_1$, and $u(x,t) \to 1$ as $t \to \infty$ if ... ... It is assumed that
u_0 ... for ...

... when $l < l_1$, the combustion process dies out and when $l > l_1$ it continues
... . When $l < l_1$, combustion of a mixture of a ... of a ... in particular
...

Suppose $f(u)$ satisfies (3), and $u_0(x)$ has the form (4), where

$$l > \frac{\pi}{2\sqrt{k}} + \frac{\bar{\alpha}}{\sqrt{k}\,(y_4 - \bar{\alpha})} \; , \tag{5}$$

$k = \frac{F(y_0)}{...}$, $a < \bar{\alpha} < y_0 < 1$, the numbers $\bar{\alpha}$ and y_0 are such that $k(u-\bar{\alpha}) < F(u)$ for
... . Then the solution $y(x,t)$ of ...-2 ... as $t \to \infty$ uniformly
... each finite interval. The author proves an existence theorem for

$$\frac{\partial u}{\partial t} - \frac{\partial^2 u}{\partial x^2} = f(u, \ldots, \frac{\partial v}{\partial t}, \lambda \frac{\partial^2 v}{\partial x^2}) \quad , \tag{6}$$

$$u\big|_{t=0} = u_0(x), \quad v\big|_{t=0} = v_0(x), \tag{7}$$

which is a generalization in combustion theory. He also proves Theorem 3: Let $u(x,t)$,
$v(x, \ldots)$ ... bounded solutions of (6)-(7) in any strip $-\infty < x < +\infty, \; 0 < t < +\infty$

ACC. NR: AP4049381

where

$$u_0(x) = 1 \text{ for } |x| < l, \quad u_l(x) = 0 \text{ for } r \ldots$$

$$v_0(x) = 1 \text{ for } |x| > l, \quad 0 \leq v_0(x) \leq \ldots$$

$$l < a\sqrt{\frac{\pi}{2q}}, \quad q = \sup_{u>0} \frac{f(u)}{u} \qquad (8)$$

then $u(x,t)$, $v(x,t) \to 1$ as $t \to \infty$, and .... uniformly in x on the whole real line. Orig. art. has: 35 formulas.

ASSOCIATION: none

SUBMITTED: 19Jul63   ENCL: 00

                                           OTHER: 000

SUB CODE: MA, FP   NO REF SOV: 009

Card 3/3

16.3500

AUTHOR: Kanel', Ya. J.

TITLE: The Behavior of Solutions to Cauchy Problem With Time Increasing Indefinitely in the Case of Quasilinear Equations Encountered in the Theory of Burning

TEXT: Let the Cauchy problem

$$(1) \qquad \frac{\partial u}{\partial t} - \frac{\partial^2 u}{\partial x^2} = F(u)$$

$$(2) \qquad u\big|_{t=0} = 0 \text{ for } x < 0, \quad u\big|_{t=0} = 1 \text{ for } x > 0$$

be considered. Let the function $F(u)$ be defined on $0 \leqq u < 1$ and continuously differentiable and it is

$$(3) \qquad F(0) = F(1) = 0$$

$$(5) \qquad F(u) > 0 \quad \text{for} \quad \alpha < u < 1; \quad F'(1) < 0$$

$$(7) \quad F(u) \geqq 0 \text{ for } 0 < u < \alpha < 1; \quad F'(u) \leqq 0 \text{ for } 0 < u < \alpha_1 \leqq \alpha$$

Card 1/2

The Behavior of Solutions to Cauchy Problem With Time Increasing Indefinitely in the Case of Quasilinear Equations Encountered in the Theory of Burning

$$\int_0^1 F(u)\,du > 0$$

Theorem: Let $u(x,t)$ be the solution of (1) - (2), where $F(u)$ satisfies the conditions (3), (5), (7). Then it holds uniformly in x, $-\infty < x < +\infty$,

$$|\tilde{u}(x + mt + C_0) - u(x_1 t)| \to 0$$

for $t \to \infty$, where $C_0 = $ const.
The function $\tilde{u}(x + mt + C_0)$ is a so-called stationary solution of (1) which satisfies the conditions

(6) $\lim\limits_{x \to -\infty} \tilde{u} = 0$, $\lim\limits_{x \to \infty} \tilde{u} = 1$.

The author thanks Professor O. A. Oleynik for advices.
There are 6 references: 5 Soviet and 1 American.

89601

S/020/61/136/002/004/034
C 111/ C 333

16.3500

AUTHOR: Kanel', Ya. I.

TITLE: Certain Problems Relative to Some Equations in the Theory of Burning

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 2, pp. 277-280

TEXT: In the theory of burning the problem

(1) $\partial u/\partial t - \partial^2 u/\partial x^2 = F(u)$

(2) $u\big|_{t=0} = u_0(x)$

is considered.

In the present paper the author investigates the behavior of the solution of (1) - (2) for $t \to \infty$; he supposes sufficient smoothness of $F(u)$.

Theorem 1: Let $u(x,t)$ be solution of (1) - (2), where

(3) $F(0) = F(1) = 0$; $F(u) \leqq 0$ for $0 < u < \alpha < 1$,

Card 1/4 $F'(u) \leqq 0$ for $0 < u < u_0 \leqq \alpha$; $F(u) > 0$ for $\alpha < u < 1$;

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S/020/61/136/002/004/034
C 111/ C 333

Certain Problems Relative to Some Equations in the Theory of Burning

$$F'(1) < 0; \quad \int_0^1 F(u)du > 0 ,$$

$u_0(x)$ is non-decreasing, and where for certain $x_1 \leq x_2$ it holds

(4) $u_0(x) = 0$ for $x < x_1$; $u_0(x) = 1$ for $x > x_2$.

Let $\tilde{u}(x+mt+c)$ be stationary solution of (1). Then for a $C = C^0$ it holds $|u(x,t) - \tilde{u}(x+mt+c^0)| \to 0$ for $t \to \infty$ uniformly in x which varies on the whole numerical line.

$u_0(x)$ is called disturbed stationary solution, if $u_0(x) = \tilde{u}(x+c_0(x))$, where $c_0(x)$ is a function of bounded variation on $-\infty < x < \infty$.

Theorem 2: Let $F(u)$ satisfy (3) or

(14) $F(0) = F(1) = 0$; $F'(0) > 0$; $F'(1) < 0$;
    $F'(u) \leq F'(0)$; $F(u) > 0$ for $0 < u < 1$.

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89601

S/020/61/136/002/004/034
C 111/ C 333

Certain Problems Relative to Some Equations in the Theory of Burning

Let the disturbed stationary solution $u_0(x)$ be either non-decreasing or let $|[u_0(x) - \tilde{u}(x)]/\tilde{u}'(x)| < \varepsilon$, where ε is sufficiently small. Then it holds the conclusion of theorem 1.

Theorem 3: Let $F(u)$ satisfy (3); assume that $u_0(x) = \tilde{u}(x) + v_0(x)$ satisfies the conditions of theorem 2; $v_0(x) \geq 0$ (≤ 0); $v_0(x) > 0$ (< 0) on an interval. Then the solution of (1) - (2) tends for $t \to \infty$ to the "displaced" stationary solution $\tilde{u}(x+C^0)$, where $C^0 > 0$ (< 0).

Theorem 4: Let $F(u)$ satisfy (14); let $u(x,t)$, $v(x,t)$ be solutions of Cauchy problem for (1) with initial functions $u_0(x)$ and $v_0(x)$. Let $0 \leq u_0$, $v_0 \leq 1$, $u_0 - v_0 = 0[\exp(1/2\ mx - \varepsilon |x|^\alpha)$ for $x \to -\infty$, where $C > 0$, $1/2 < \alpha \leq 1$, and let $\tilde{u}(x+C') < u_0 < \tilde{u}(x+C'')$, $u(x+C') < u_0 < u(X+C'')$ for certain C', C'' = const. Then $|u(x,t) - v(x,t)| \to 0$ for $t \to \infty$ uniformly in x, $-\infty < x < \infty$.

Theorem 5: Let $F(x)$ satisfy (3); $F(u) = 0$ for $0 < u < \alpha$; $\alpha < \tilde{z} < y < 1$; for $\tilde{z} < u < y$ let $F(u) > k(u - \tilde{z})$, where $k = F(y_0)/(y_0 - \tilde{z})$. $u_0(x)$ is assumed to have the form

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89601

S/020/61/136/002/004/034
C 111/ C 333

Certain Problems Relative to Some Equations in the Theory of Burning

(16) $u_o(x) = 0$ for $|x| > 1$; $u_o(x) = 1$ for $|x| < 1$, where

$$1 > \frac{\pi}{2} \sqrt{k} + \bar{\omega}/\sqrt{k} (y_o - \bar{\omega}).$$

Then $u(x,t) \to 1$ for $t \to \infty$.

Theorem 6: Let $F(u) > 0$ for $0 < u < 1$; $F(1) = 0$; $F'(0) + F(0) > 0$; $u_o(x) > 0$ on an interval. Then $u(x,t) \to 0$ for $t \to \infty$.

Theorem 7: Let $F(u)$ satisfy (3); let $u_o(x)$ have the form (16), where $1 < \sqrt{\pi/2q\theta}$, $q = \text{sug} [F/u]$, $0 \leq u \leq 1$. Then $u(x,t) \to 0$ for $t \to \infty$.

The author mentions Bernshteyn.

There are 10 references: 8 Soviet and 2 American.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M. V.
Lomonosova (Moscow State University imeni M. V. Lomonosov)
PRESENTED: July 25, 1960, by J. G. Petrovskiy, Academician
SUBMITTED: July 23, 1960   Card 4/4

KANEL', Ya. I.

Cand Phys-Math Sci - (diss) "Behavior of the solution of equations
of the combustion theory given large values for time." Novosibirsk,
1961. 8 pp; (Academy of Sciences USSR, Siberian Division, Joint
Academic Council for Phys-Math and Tech Sci); 160 copies; price
not given; bibliography on p 8 (11 entries); (KL, 7-61 sup, 219)

KANEL, YA. I.

AID' Nr. 976-9   24 May

STABILIZATION OF SOLUTIONS OF A CAUCHY PROBLEM FOR EQUATIONS ON THE THEORY OF COMBUSTION (USSR)

Kanel', Ya. I. Matematicheskiy sbornik, v. 59(101), 1962, 245-288.
S/039/62/059/000/010/011

The behavior of a solution of the Cauchy problem as t→∞ in the half-plane t > o for the equation

$$\frac{\partial u}{\partial t} - \frac{\partial^2 u}{\partial x^2} = F(u),\qquad (1)$$

Card 1/3

AID Nr. 976-9   24 May

STABILIZATION OF SOLUTIONS [Cont'd]   S/039/62/059/000/010/011
with the initial condition $u|_{t=0} = u_o(x)$ is studied under the assumption that
F(u), satisfies the following conditions:

$$F(0) = F(1) = 0, \quad F(u) \leq 0 \text{ at } 0 < u < \alpha < 1,$$
$$F(u) > 0 \text{ at } \alpha < u < 1, \quad \int_0^1 F(u)\,du \geq 0. \quad\quad (2)$$

The solution of (1) of the form $u(x, t) = \tilde{u}(x+mt+C)$, where m = const and
C = const, is called stationary (stationary wave). It is proved that such a
solution exists under conditions (2). Assuming that F(u) satisfies condi-
tions (2), that $F'(u)$ is nonpositive on the interval $0 < u \leq 1$, that the initial
function $u_o(x)$ is nondecreasing, and that $u_o(x) = 0$ at $x < x_2$, and $u_o(x) = 1$
at $x > x_2$, it is proved that the solution of the Cauchy problem for equation
(1) as $t \to \infty$ tends uniformly with respect to (x) toward a stationary solution
on the entire x-axis. Under some conditions for F(u) and $u_o(x)$ it is also

Card 2/3

STABILIZATION OF SOLUTIONS (Cont'd)　　　　S/039/62/059/000/010/011

shown that the solution of (1) with respect to (t) tends uniformly toward zero as $x \to -\infty$, and towards unity as $x \to +\infty$; its derivative tends toward zero as $x \to \pm\infty$. Stability conditions of a stationary solution under certain perturbations are established.

[LK]

Card 3/3

KANELIS, St.

Technical and economic indicators, a means of checking the efficacy of industrial investments. Probleme econ 16 no.6: 145-146 Je '63.

1. Director tehnic, Institutul de proiectari chimice.

KANAL'SKAYA, K....

Labor and Laboring Classes - Education

Source of knowledge. Klub no. 5, '51

1. KANEL'SKAYA, M.

2. USSR   (600)

4. Libraries

7. One of many, Klub 2 No. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April, 1953. Uncl.

L. KANEMAY TYYIl. I.S.: KHODUKIN, N.T.: LYSUNKINA, V.A:

2. USSR (600)

4. Asia, Central – Hemorrhagic Fever

7. Search for carriers of hemorrhagic fever in Central Asia. Vop. kraev.pat. no. 2, 1952

February

9. SURCE: Monthly List of Russian Accessions, Library of Congress, ~~March~~, 1953. Uncl.

KANEP, S.V.

Correlative structure of the skull in the vole Microtus
(Microtus) ungurensis Kastschenko (1913). Zool.zhur. 44
no.11:1706-1711 '65.   (MIRA 18:12)

1. Kafedra zoologii pozvonochnykh Leningradskogo gosudarstven-
nogo universiteta.

KANEP, S.V.

Geographical and age—related changes in the green toad. Vest. LGU
18 no.9:161-164 '63.   (MIRA 16:6)
(Toads) (Growth)

KANEP, S.V.

Geographical variation of the growth of organs in the grass frog.
Prim. mat. metod. v biol. no.3:86-94 '64.

(MIRA 17:11)

1. Leningradskiy universitet.

KANEP, S.V.

Interspecific geographical variation of common (Microtus arvalis) and Transcaspian (Microtus transcaspicus) voles. Vest. LGU 19 no.3: 174-177 '64.   (MIRA 17:3)

KANEP, S.V.

Allometric growth of the internal organs of a grass frog. Vest.
LGU 17 no.15:126-129 '62.   (MIRA 15:8)
                          (Growth) (Frogs) (Viscera)

KANEPAYA, A.   Q-2

USSR / Farm Animals. Cattlo

Abs Jour : Rof Zhur-Biol., No 6, 1968, 26125

Author   : Kanopaya A., Tsosyulovich I.

Inst   : Not givon

Titlo   : Tho Chango of Composition and Proportios of Buttorfat
           during Lactation (Izmononiyo sostava i svoystv zhira
           moloka v tochoniyo laktatsii)

Orig Pub : Sb. stud. nauchno-isslod. rabot. Latv.s.-kh. akad, 1957,
           vyp.1, 101-104

Abstradt : Tho offoct of tho conditions of fooding and tho poriod of
           lactation upon tho composition and physicochomical proportios
           of buttorfat was studiod at tho training farm "Ramava" on
           6 contomporary cows of tho Brown Latvian brood. It was
           found that in tho main poriod of lactation, undor stablo mana-

Card 1/2

                                                               Q-2

USSR / Farm Animals. Cattlo.

Abs Jour : Rof Zhur-Biol., No 6, 1958, 26125

Abstract : gomont and with tho providing of cows with succulont rations,
           tho buttorfat composition did not divorgo from tho ostablishod
           avorago norms. On tho transfor of cows to pasturo maintonanco,
           tho avorago porcontago of buttorfat incroasod (from 3.87%
           in March to 4.2% in May). Tho numbor of largo fat globulos
           also incroasod.

Card 2/2

VETRA,R.; KANEPE,V., red.; KIRULE, E., tekhn. red.

[Sugulda; a tourist guidebook] Sugulda; atkartots un papildinats izdevums. Riga, Latvijas Valsts izdevnieciba, 1960. 102 p .
(MIRA 14:12)

(Sigulda region—Description and travel)

KANEPE, V., red.; AIZUPIETE, M., tekhn. red.

[Let us visit Zemgale! Sightseeing tours] Apcelosim Zemgali; turisma marsruti. Atkartots un papildinats izdevums. Riga, Latvijas Valsts izdevnieciba, 1960. 189 p. [In Latvian]   (MIRA 14:12)
   (Zemgale—Description and travels)

GOLDINS, V.; STREBEIKO, K.[translator]; MACULEVICS, M., spets. red.;
    KANEPE, V., red.; VASILEVSKA, L., tekhn. red.

[Riga; a short reference book] Riga; isas izzinas. Riga, Lat-
vijas Valsts izdevnieciba, 1960. 279 p. [In Latvian]
                                                (MIRA 15:1)

        (Riga—Directories)

KANEPS, G., st. nauchn. sotr.; UZNALNS, V., prepodavatel';
BRANKA, V., red.

[Mechanization of livestock farming] Lopkopibas darbu
mehanizacija. Riga, Latvijas Valsts izdevnieciba, 1964.
152 p. [In Latvian]   (MIRA 18:7)

1. Nauchno-issledovatel'skiy institut shkol pri Minister-
stve obrazovaniya (for Kaneps).

KANER B.L.

94-4-17/25

(card 2)

AUTHOR: Kireyev, M.I., Engineer

TITLE: Scientific-technical Conference on Problems of Static Electricity (Nauchno-tekhnicheskoye soveshchaniye po bor'be so staticheskim elektrichestvom)

PERIODICAL: Promyshlennaya Energetika, 1958, Vol.13, No.4, pp. 52 - 3 (USSR).

ABSTRACT: The Central Management of the All-Union Chemical Society imeni D.I. Mendeleyev (Vsesoyuznoye khimicheskoye obshchestvo imeni D.I. Mendeleyeva), together with the Ministry of the Chemical Industry of the USSR (Ministerstvo khimicheskoy promyshlennosti SSSR), called a scientific-technical conference on problems of static electricity. The conference met in Moscow on December 16 - 18, 1957 and six reports were read. Prof. I.S. Roysen gave a mainly theoretical report on static electricity and methods of dealing with it. Candidate of Technical Sciences V.S. Medvedeva dealt with the ionisation of air by means of radio-active substances. Engineer A.V. Beletsvetov described the construction of radio-active ionisers. Senior Scientific Assistant Borisov indicated present practice in lightning protection. A proposed standard for protection against static electricity and secondary effects of lightning

Card1/2

KANER, B.L., inzh   (Moskva)

Regulations governing safety measures in dealing with static electricity in the chemical industries. Elektrichestvo
no.1:77-81 Ja '64.   (MIRA 17:6)

KANER, B.L.; KATS, M.I.

"Fundamentals of safety and fire prevention techniques in the
chemical industry," by M.V.Solov'ev, P.I.Ermolov, N.A.Strel'chuk.
Rreviewed by B.L.Kaner, M.I.Kats. Khim. prom. no. 7:615-616
0-N '60.   (MIRA 13:12)
                    (Chemical industries—Safety measures)
    (Solov'ev, N.V.)   (Ermolov, P.I.)   (Strel'chuk, N.A.)

KANER, B.L.

Safety problems in designing plants for large-scale chemical industry.
Bezop.truda v prom. 5 no.12:1-2 D '61.   (MIRA 15:1)
         cals--Manufacture and industries--Safety measures)

ROYZEN, I.S.; KAMER, B.L.

Principles for the normalization of protection from static
electricity in the chemical industry. Zhur. VKHO 7 no.6:626-632
'62.   (MIRA 15:12)
        (Chemical industries—Safety measures)
              (Electrostatics)

SPEKTOR, Ye.M.; KANER, D.L.

Activity of the section for industrial safety of the Central
Administration of the D.I.Mendeleev All-Union Chemical Society.
Zhur.VKHO 8 no.1:110-111 '63.   (MIRA 16:4)
            (Chemical societies)   (Industrial safety)

L 14337-65   Pa-4   AMD
ACCESSION NR: AP5003114   S/0061/5i. /009/003/073 0/0324

Aanur, . L.; Reytman, K. Ya.

... safety ...
... ...

... rile protection and techniques of ...
... ...tion, and operation of exter... ...
are discussed. These problems are pressing because ... ...
... rubber, etc., practically all specify outdoor equipment with the
... compressors. The production areas ...
... f several exterior instal...
... and auxiliary product ...
... sed installations stems chiefly from ...
tanks, condensate receivers and storage tanks. The ... f ...
and plant workers to keep at hand large stocks of the starting materials
results from underestimating the fire hazard of compressed gases and readily
flammable liquids.

ASSOCIATION: none   ENCL: 00   SUB CODE: ...
SUBMITTED: 00   OTHER: 000   JPRS
NO REF SOV: 000
Card 1/1

FD-3265

USSR/Physics - Skin effect

Card 1/1   Pub. 146-24/44

Author   : Azbel', M. Ya.; Kaner E. A.

Title   : Anomalous skin effect for arbitrary integral of collisions

Periodical   : Zhur. eksp. i teor. fiz., 29, No 6(12), Dec 1955, 876-878

Abstract   : In an earlier work (M. I. Kaganov, M. Ya. Azbel', DAN SSSR, 102,
                49, 1955) one of the authors obtained an expression for the surface
                impedance of a metal in the case of anomalous skin effect (i. e. an
                effect taking place at high frequencies and low temperatures, when
                the length of free path of electrons is large in comparison with the
                depth of penetration of the field into the metal); here it was as-
                sumed that the integral of collisions can be written with the aid of
                the relaxation time tau, distribution function of electrons, and
                equilibrium Fermi distribution function. Introduction of the relax-
                ation time can be strictly founded only for high temperatures (i. e.
                much greater than the Debye temperature); for lower temperatures the
                integral of collisions generally cannot be described in the usual
                form. In the present communication the authors demonstrate that the
                formula for impedance obtained in the above mentioned work is cor-
                rect for arbitrary integral of collisions, use being made of the
                central symmetry of the Fermi surface. They thank I. M. Lifshits
                for judging the obtained results. Two references.

Submitted   : July 14, 1955   - Phys.Tech. Inst, AS ukr SSR

Category : USSR/Electricity - Conductors

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4242

Author   : Azbel', M.Ya., Kaner, E.A.
Inst   : Physicotechnical Institute, Academy of Sciences Ukrainian SSR, Khar'kov
Title   : Theory of Cyclotron Resonance in Metals

Orig Pub : Zh. eksperim. i teor. fiziki, 1956, 30, No 4, 811-814

Abstract : An investigation of the surface impedance of a metal as a function of
the value of a constant magnetic field applied parallel to its surface,
for arbitrary dispersion and for an arbitrary collision integral. Since
the resonance impedance dip occurs at such frequencies, at which the
anomalous skin effect takes place, the authors solve simultaneously
Maxwell's equation and the kinetic equation in addition to the Fermi dis-
tribution function. Unlike the known "diamagnetic" resonance (using
the author's terminology), which occurs in semiconductors at a single
frequency, cyclotron resonance occurs in metals at many frequencies,
close to multiples of the fundamental frequency. Experimental study
of cyclotron resonance makes it possible in principle to determine the

Card   : 1/2

O-4

Category : USSR/Electricity - Conductors

Abs Jour : Ref Zhur - Fizika, No 2, 1957, No 4242

character of the cross sections of the constant-energy surfaces (closed or unclosed) the degree of filling of the energy zones, and the speed at the Fermi surface.

Card   : 2/2

The present work discusses the introduction of an effective dielectricity constant $\varepsilon_{eff} = (4\pi/cZ)^2$ within the domain of the anomalous skin effect. Here $Z = R + iX$ denotes the surface impedence of the metal. The introduction of ε_{eff} is based upon the fact, that Z practically does not depend either on the polarization of the inciding wave or on the angle of incidence. According to GINSBURG this is true for $|\varepsilon'| \gg 1$, $\varepsilon' = \varepsilon(\omega) - 4\pi i\sigma/\omega$, and is rigorously proved for such frequencies and temperatures at which the normal skin effect occurs. To the above mentioned condition there corresponds the inequation $|\delta| \ll \lambda$ $\delta = (c/\omega\sqrt{\varepsilon'}, \lambda = c/\omega)$, i.e. the depth of penetration of the electromagnetic field into the metal is much smaller than the wavelength in the vacuum. The latter condition holds good also in the domain of the anomalous skin effect because also in this case surface impedance does not depend on polarization and also not on the angle of incidence. Rigorous proof of this assertion is what this work intends to attain.

In accordance with the definition, it is assumed to be true that: $Z_g = (4\pi/c)E_x(0) Z_p = -(4\pi/c) E_y(0)/H_x(0)$. The index s corresponds to the polarization of the electric field in the plane of the metal surface, the index p corresponds to polarization in

the plane of incidence. In the case of oblique incidence (at an angle of φ) of an electromagnetic wave with the frequency ω onto a half-space ($z > 0$) occupied by metal expressions for the surface impedence are found on the usual assumptions of the theory of the anomalous skin effect. They are explicitly given for the following cases: For the mirror-like reflection of the electrons on the metal-vacuum boundary as well as for diffuse reflection. In the general case($\varphi \neq 0$) it holds that Z_s = Z_p, and Z_s then depends on three parameters with the dimension of one length: skin depth δ of the penetration of the field into the metal, free length of path l of the electrons and wave length λ in the vacuum. The question is now investigated as to the importance of this dependence in individual cases. At all frequencies of up to $\omega < 10^{16} \sec^{-1}$ and at any temperatures it holds that $\lambda \gg \delta$ and $\lambda \gg l$, and $Z_p = Z_s$ is obtained. Here surface impedance does not depend on the angle of incidence. Thus, the possibility of introducting an effective dielectricity constant within the entire frequency- and temperature domain is proved. In conclusion the corrections to the surface impedance, which are independent of the angle of incidence, are discussed.

INSTITUTION: Physical - Technical Institute of the Academy of Sciences of the
               Ukrainian USSR

KANER, E. A.

1/1166. TOWARDS THE THEORY OF THE ANOMALOUS SKIN

M. I. Kaganov and M. Ya. Azbel'

Inst. Akad. Nauk SSSR.

Recently a large number of papers have appeared discussing

KANER, E. A.

-51-1-9/18

AUTHORS: German, V.L. and Kaner, E.A.

TITLE: Optical Activity with the Non-linear Effect of "Saturation" Taken into Account. (Opticheskaya aktivnost' s uchetom nelineynogo effekta "Nasyshcheniya".)

PERIODICAL: Optika i Spektroskopiya, 1957, Vol.III, Nr.1, pp.68-72. (USSR).

ABSTRACT: The strong dependence of the coefficient of absorption of microwaves near resonance on the intensity of the incident radiation is well-known in radiowave spectroscopy (Refs. 1 & 2). The half-width of the resonance line is proportional to the signal power and the energy absorbed at large intensities remains constant (saturation). These non-linear effects in optics were described qualitatively by S. I. Vavilov (Ref.3). In the present paper it is shown that to observe the dependence of the absorption coefficient on the intensity it is necessary firstly, to have the frequency of the external field close to the resonance frequency and secondly, the quantity $1/\tau_2$ should be sufficiently small (τ = the average time in which the population of the energy levels ... are Slavic. ... frequency

C

Card 1/3

51-1-9/18

Optical Activity with the Non-linear Effect of "Saturation" taken
into Account.

ASSOCIATION: Institute of Radiophysics of Academy of Sciences of
              the Ukrainian SSR, Kharkov. (Institut radiofiziki AN
              Ukrainskoy SSR, Khar'kov.)

SUBMITTED: December 14, 1956.

AVAILABLE:

Card 3/3

O-4

USSR/Electricity - Conductors

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1378

possible to determine, from experimental data, the topolo-
gy of the boundary of the Fermi surface and its actual cha-
racteristics. The surface impedance of the metal is calcu-
lated for an arbitrary direction of the constant magnetic
field relative to the surface. The examination was carried
out also under the most general assumptions of the electron
theory of metals (arbitrary law of dispersion and collision
intervals); it is shown that it is possible to introduce
the mean-free-path time of the electrons under conditions
of anomalous spin effect at all temperatures.

Card 2/2

56-2-40/47

On the Theory of Cyclotron Resonance

56-6-23/47

are 5 references, 4 of which are Slavic.

ASSOCIATION: Institute for Radiophysics and Electronics AN Ukrainian SSR
(Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy SSR)

SUBMITTED: June 28, 1957

AVAILABLE: Library of Congress

Card 3/3

KANER, E.A.: Master Phys-Math Sci (diss) -- "The theory of cyclotron reson-

ance in metals". Khar'kov, 1958. 9 pp, (Min Higher Educ Ukr. SSR, Khar'kov

Order of Labor Red Banner State U im A.M. Gor'kiy), 150 copies (KL, No 1,

1959, 113)

SOV/56-34-3-19/55

AUTHOR: Kaner, E. A.

TITLE: On the Theory of Galvanomagnetic and Thermomagnetic Effects in
            Metallic Films (K teorii gal'vanomagnitnykh i termomagnitnykh
            effektov v metallicheskikh plenkakh)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34,
            Nr 3, pp. 658-669 (USSR)

ABSTRACT: The electron distribution function and electric conductivity, thermal
            conductivity and Thomson coefficients have been determined for a metal-
            lic film located in a constant magnetic field directed at an arbitrary
            angle with respect to the surface of the film. No special assump-
            tions have been made regarding the electron dispersion law.
                 The author assumes here that a relaxation time
            $t_o(\vec{p})$ can be introduced in which case $\vec{p}$ signifies the quasi
            momentum of the electron. First the posing of the problem and
            the solution of the kinetic equation are dealt with. The author
            investigates first the electric conductivity of a metal layer
            of the thickness d which is in a constant magnetic field. The
            author starts in this connection from a linearized kinetic
            equation for the addition f to the Fermi distribution function
            corresponding to equilibrium. The periodicity of f $(z, \varepsilon, \tau, p_H)$
            with respect to the variable τ with the period 2π and the

Card 1/3

On the Theory of Galvanomagnetic and Thermomagnetic Effects in
Metallic Films

condition of the diffuse reflection of the electrons from
the boundary of the film serve as limiting condition for this
equation. A formula for the tensor of the effective conduct-
ivity is calculated in the next paragraph. An investigation
of the limiting cases follows. The author investigates the
range of the intense magnetic fields in view of comparing the
results of the present theory with the experiments by Borovik
and Lazarev. The law of dispersion is assumed here to be iso-
tropic and quadratic. The formulae for the components of the
tensor of the eletric conductivity are specialized here for
the following special cases: parallel and sufficiently intense
magnetic field, parallel weak magnetic field, or sufficiently
thin film and vertical field. Formulae for the specific re-
sistance and for the Hall (Kholl) field strength in a film
which is in a strong magnetic field in which case electrons
and holes may exist, are given in the next chapter. The re-
sistance in a strong transversal magnetic field increases
according to the same law as in massive metal, only more
slowly. The last chapter deals with the thermomagnetic effects
in the films and determines a correlation of the tensors of
the thermal conductivity and the Thomson coefficient with the

Card 2/3

On the Theory of Galvanomagnetic and Thermomagnetic Effects in SOV/56-34-3-19/55
Metallic Films

tensor of electric conductivity.
There are 13 references, 5 of which are Soviet.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy
SSR (Institute for Radiophysics and Electronics AS Ukrainian
SSR)

SUBMITTED: September 14, 1957

Card 3/3

21(9)

AUTHOR: Kaner, E. A.

TITLE: On Some Particular Features of Cyclotron Resonance in Metals With Non-Convex Fermi Surfaces (O nekotorykh osobennostyakh tsiklotronnogo rezonansa v metallakh s nevypukloy poverkhnost'yu Fermi)

ABSTRACT: In earlier papers (Refs 1-5) Azbel' and Kaner already showed that cyclotron resonance in metals in the case of any non-quadratic dispersion law $\varepsilon(\vec{p})$ attains an extremum at Larmor frequencies $\Omega_{ext} = eH/cm_{ext} = 2\pi eH/c (\partial S/\partial \varepsilon)_{ext}$ (Ω- values in elliptic points of reference - in these points of reference electron velocity is parallel to H). As to the method of denotation cf. reference 2. For the purpose of investigating Larmor resonance frequencies in the case of non-convex Fermi surfaces the Larmor resonances relating to hyperbolic reference points were not taken into

Card 1/2

On Some Particular Features of Cyclotron Resonance   SOV/50-35-4-19/52
in Metals With Non-Convex Fermi Surfaces

account. It is shown that at Larmor frequencies near
hyperbolic reference points of a non-convex Fermi
surface the so-called logarithmic cyclotron resonance
may occur. Cyclotron resonance at residual (extreme)
Larmor frequencies in the case of non-convex Fermi
surfaces shows the same peculiarities as in the case
of convex surfaces (cf.Refs 1-5). As these earlier
papers (Refs 1-5) contain all definitions and
conditions, the present paper is difficult to under-
stand without any knowledge of the aforementioned
earlier papers. There are 1 figure and 6 references,
4 Soviet references.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk Ukrainskoy
SSR(Institute for Radiophysics and Electronics of the
Academy of Sciences of the UkrSSR)

SUBMITTED: April 27, 1958

Card 2/2

AUTHOR: Kaner, E. A.

TITLE: Cyclotronic Resonance in Films (Tsiklotronnyy rezonans v plenkakh)

PERIODICAL: Doklady Akademii Nauk SSSR, 1958, Vol. 119, Nr 3, pp. 471-474 (USSR)

ABSTRACT: This work gives the results of the computation of the surface impedance of a monocrystalline metal film of the thickness d in the case of strongly anomalous character of the skin effect. Then the effective depth of the attenuation of the current $\delta_{eff} = (c^2|Z|/2\pi\omega)$ is small compared with all the other parameters of the dimension of a length: The maximum radius of the orbit r, the free length of path l, the thickness d of the film. Here the free length of path of course is assumed to be the greatest of these parameters. At $d > 2r$ $(d - 2r \gg \delta_{eff})$ the electrons, whichtake part in the resonance, do not "know" anything about the existence of the second boundary of the film and the surface impedance of the film in this case coincides with the impedance of the massive metal (with an accuracy to terms of the order $\exp(-d/\delta_{eff})$). At $d < 2r$ that part of the electrons, the orbit diameter of

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20-119-3-19/65

Cyclotronic Resonance in Films

which in the magnetic field is equal to $2\varrho = 2r \sin\varphi > d$, (whereby φ denotes the angle between the direction of $\vec{H}$ and of the velocity $\vec{v}$ of the electron), has collisions with both parts of the film and therefore they do not take part in the resonance. (On this occasion a diffuse scattering of the electrons is assumed). The rest of the electrons the velocity of which encloses a small angle with the magnetic field $(2\varrho < d)$, as before do not "know" anything about the second boundary and give the same contribution to the resonance as also in the case of a massive sample. If one starts with such a physical explanation of the phenomenon, the formulae given in this work, for the current density and for the surface impedance of the film can be understood with ease. These formulae were ascertained by strict solution of the equations of the problem. The complete system of the equations consists of the Maxwell equation and of the kinetic equation for the additional term to the Fermi distribution function. The formulae, found here, are exact and are valid at arbitrary angles of inclination of $\vec{H}$ relatively to the film and in case of arbitrary relationships between the parameters, which occur in these formulae. In a film of the thickness

Card 2/4

20-119-3-19/65

Cyclotronic Resonance in Films

$d < 2r$ a peculiar anisotropy of the surface impedance with regard to the polarisation of the incident wave exists: $Z_{xx} \neq Z_{yy}$. Such a polarisation does not exist in a massive metal. At $2r - d \sim d$ a resonance with regard to the effective mass must be absent. And above all the resonance with regard to the extreme effective masses is suppressed, if the orbit diameter for the corresponding electrons is greater than d. The influence of the shape of the sample upon the shape of the cyclotronic resonance essentially can facilitate the harmonic analysis of the resonance curves. All here found conclusions are valid only for a certain angle of inclination of the magnetic field to the surface of the film, for in case of wide angles of inclination resonance does not exist. A consideration of the non diffusion-like character of the scattering of the electrons at the boundaries of the film does not change the results. Finally the author thanks I. M. Lifshits and M. I. Kaganov for the control of the results, which were obtained here.
There are 1 figure and 7 references, 4 of which are Soviet.

Card 3/4

20-119-3-19/65

Cyclotronic Resonance in Films

ASSOCIATION: Nauchno-issledovatel'skiy institut radiofiziki i elektroniki Akademii nauk USSR (Scientific Research Institute of Radio-physics and Electronics AS Ukrainian SSR)

PRESENTED: November 31, 1957, by L. D. Landau, Member, Academy of Sciences, USSR

SUBMITTED: October 30, 1957

AVAILABLE: Library of Congress

Card 4/4

KANER, E. A.

69948

SOV/141-2-4-3/19

9,9000

AUTHORS: Kaner, E.A. and Bass, F.G.

TITLE: Propagation of Electromagnetic Waves in a Medium With
Random Irregularities Placed Above a Perfectly Conducting
Plane

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika,
1959, Vol 2, Nr 4, pp 553 - 564 (USSR)

ABSTRACT: Formulae are derived for the main statistical character-
istics (average field, amplitude and phase fluctuations)
and their dependence on the frequency and polarization
of radio waves and the distance and height of the
receiving and transmitting aerials. In order to have a
complete statistical description of the radiation field,
it is necessary to know the distribution function
$f(\delta\varepsilon)$ of the random deviations $\delta\varepsilon$ of the dielectric
constant from the average value $\bar{\varepsilon}$ which for simplicity
was taken as unity. However, at present the theory does
not give an unambiguous answer to the problem of the
distribution of $\delta\varepsilon$. If one considers that this
distribution is normal and takes only small fluctuations,

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then in order to obtain a complete statistical description
it is sufficient to know only the second moment of
$f(\delta\varepsilon)$ or the correlation function $\delta\varepsilon(\underline{r}_1)\delta\varepsilon(\underline{r}_2)$. It

is assumed that the correlation function is of the form
given by Eq (1.1), where $\overline{\delta\varepsilon^2}$ is independent of the
coordinates (statistically uniform medium) and the
coefficient W depends only on the moduli of the
differences between the components of the vectors $\underline{r}_1$

and $\underline{r}_2$. The distribution function of each of the

components of the field $E = E_r + iE_i$ (E_r and E_i

are the real and imaginary parts of E) is taken to be
of the form given by Eq (1.2), where the symbols involved
are defined by Eq (1.3). Using this formula, it is shown
that away from the minima of the mean field, i.e. when

$\overline{\zeta^2} \ll |\overline{E}|^2$, the mean phase is given by Eq (1.4). The

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mean square phase fluctuation is given by Eq (1.5),
the mean amplitude by Eq (1.6), the mean square of
amplitude fluctuation by Eq (1.7) and the mutual
correlation between the amplitude and phase by Eq (1.8).
Thus, a complete description of the radiation field is
obtained if the mean field and the corresponding mean
square values are known. In order to calculate these
quantities, use is made of Maxwell's equations which,
after the exclusion of the magnetic field, can be
reduced to the form given by Eq (2.1). Assuming that
$\varepsilon = 1 + \delta\varepsilon$, $\underline{E} = \underline{E} + \zeta$, the final equations are of the
form given by Eqs (2.3) and (2.4). These equations must
be supplemented by the appropriate boundary conditions
on the separation boundary. If the latter is a perfectly
conducting plane, the tangential components of the field
must be zero (Eq 2.5). The subscript "0" indicates
that the quantities are evaluated at $z = 0$, where the
z axis is normal to the separation boundary and passes

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through the point z_o at which the radiator is located.

The x axis passes along the projection of the line
connecting the point of observation $r(L,0,z)$ with the
radiator $r_o(0,0,z)$. The boundary condition for the
vertical component E_z is given by Eq (2.6). It is
assumed that $|\nabla \delta \varepsilon| \ll k|\delta \varepsilon|$ or $kl \gg 1$, in which case
polarization corrections can be neglected. Accordingly, the
vector equations (2.3) and (2.4) can be reduced to the
form given by Eqs (2.7) and (2.8), subject to the boundary
condition given by Eq (2.9). The δ function on the
right-hand side of Eq (2.7) is due to the presence of the
source at the point $\underline{r}_o$. These equations are solved

for the mean field in Section 3, and it is shown that in
order to find this field above the perfectly conducting
plane, it is sufficient to replace the propagation

constant k by the quantity $\varkappa = k \sqrt{\varepsilon_{3 tp}}$ in which

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$\varepsilon_{9\phi\phi}$ is given by Eq (3.11) (Which is the same as the value of $\varepsilon_{9\phi\phi}$ in an infinite medium - Ref 5). Section 4 is concerned with the statistical characteristics of the field in the distant zone. In this section, formulae are derived for the mean square fluctuations mentioned above. It is shown that the fluctuations increase rapidly near the minima of the mean field and this is associated with the interference structure of the electromagnetic field in space. The interference effects are most sharply defined when the amplitude of the direct and the reflected waves is the same. If the modulus of the amplitude reflection coefficient is different from unity, the interference phenomena do not lead to such a strong increase in the fluctuations. In the case of small reflection coefficients one can use the formulae obtained for an infinite medium. If the correlation function can be approximated by a formula of the form $\delta\varepsilon^2 \exp\left[-(x^2 + y^2)/l_{\parallel}^2 - z^2/l_{\perp}^2\right]$,

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AUTHORS: Bass, F.G. and Kaner, E.A.

TITLE: Correlation of Electromagnetic Field Fluctuations in a
             Medium Having Random Irregularities and Placed Above a
             Perfectly Conducting Plane

ABSTRACT: The present paper is the continuation of the paper on
             pp 553-564 of this issue. Using the results obtained
             in that paper, general formulae are derived for the
             spatial correlation functions for amplitude and phase
             fluctuations, assuming that the relative fluctuations are
             small. If the fluctuation part of the electromagnetic
             field is much smaller than the regular component (at
             points distant from the zeros of the latter) the phase
             and amplitude fluctuations are given by Eqs (1.1) and
             (1.2). The correlation between the amplitude and phase
             fluctuations at different points 1 and 2 is then
             given by Eqs (1.3) and (1.4). Under certain simplifying
             assumptions, it can be shown that the phase and
             amplitude correlations are equal and are given by Eq (1.5).

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Thus, the phase and amplitude correlation functions are
completely defined by the quantity

$\overline{\zeta_1 \zeta_2^{\ast}}$. Using Eq (1.6) derived in the previous paper,

it can be shown that $\overline{\zeta_1 \zeta_2^{\ast}}$ is given by Eq (1.7). This

equation is then used to calculate the correlation for two
special cases, namely, the case of transverse and longi-
tudinal correlation. There are 3 Soviet references.

ASSOCIATION: Institut radiofiziki i elektroniki AN USSR
(Institute of Radiophysics and Electronics of the
Ac.Sc. Ukrainian SSR)

SUBMITTED: March 19, 1959

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AUTHOR: Kaner, E.A.

TITLE: On the Theory of Propagation of Waves in a Medium With
            Random Irregularities

ABSTRACT: The total system of equations describing the propagation
          of electromagnetic waves in a medium with small fluctuations
          $\delta\varepsilon$ in the dielectric constant ε about the mean value
          equal to unity, is given by Eqs (1), where $\underline{D}$ is the
          induction, $\underline{E}$ and $\underline{H}$ are the electric and magnetic
          fields (the medium is non-magnetic) and c is the
          velocity of light in vacuo. The connection between $\underline{D}$
          and $\underline{E}$ is assumed to be of the form given by Eq (2).
          Eliminating $\underline{H}$ from Eq (1), one obtains Eq (3). In
          this equation, the bar denotes an average of $\delta\varepsilon$. The
          statistical averaging of Eq (3) leads to Eq (4).
          Usually, the last term in Eq (4) is neglected because it
          is small. To calculate $\zeta\delta\varepsilon$ it is necessary to find ζ .
          The equation for the latter quantity can be obtained by

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subtracting Eq (4) from Eq (3) and this leads to Eq (5).
In the determination of ζ and $\overline{\zeta \delta \varepsilon}$ the difference
$\zeta \delta \varepsilon - \overline{\zeta \delta \varepsilon}$ can be neglected. It is assumed that the
field is monochromatic $(\sim \exp(-i\omega t))$ and the dependence
of $\delta \varepsilon$ on time is neglected. In that case the solution of
Eq (5) is given by Eq (6), where $T_{ik}(r)$ is the Green

tensor given by Eq (7). Substituting Eq (6) into Eq (4),
one obtains Eq (8). An expression is then sought for the
effective dielectric constant $\varepsilon_{3??}$ which depends on the

propagation constant as given by Eq (9). If the medium
is considered to be isotropic, then Eq (11) is obeyed and
the quantity $a(x)$ can easily be calculated and the
equation for the effective dielectric constant is of the
form given by Eq (12), where W is the correlation
coefficient. Analysis of these expressions shows that if

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$\sqrt{\overline{\mu^2}}\, kl \ll 1$ (l is the correlation radius and μ is
the fluctuation in the refractive index), then the
quantity $\varkappa$ in Eqs (12) and (13) can be replaced by k.
Even with this limitation, the limiting case $kl \gg 1$
is still possible (because μ is small). Table 1
gives formulae for $\varepsilon_{\varkappa\varkappa\varkappa} - 1$ with the absorption
coefficient $\alpha = k\,\mathrm{Im}\,\varepsilon_{\varkappa\varkappa\varkappa}$ and the relative change in the
phase velocity
$- \Delta v_{\varrho a 3}/c = (1 - \varepsilon_{\varkappa\varkappa\varkappa}^{1/2})$ for two limiting cases for

both electromagnetic and sound waves. The quantity
$\overline{l^n}$ ($n = 1, 2, 3$) in the table denotes the integral:

$$\int_0^\infty d\rho\, \rho^{n-1}\, w(\rho) \,.$$

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The last row in Table 1 refers to sound waves and the
row above refers to electromagnetic waves.
There are 1 table and 4 Soviet references.

ASSOCIATION: Khar'kovskiy institut radiofiziki i elektroniki
AN USSR (Khar'kov Institute of Radio-physics and
Electronics of the Ac.Sc. Ukrainian SSR)

SUBMITTED: March 19, 1959

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9 (9)

AUTHORS: Kaner, E. A., Bass, F. G.   SOV/20-127-4-17/60

TITLE: On the Statistic Theory of the Propagation of Radio Waves Over
             an Ideally Conducting Plane

ABSTRACT: In the present paper, the statistic characteristic electro-
             magnetic field propagated in a medium with small random fluc-
             tuations $\delta\mathcal{E}$ of the dielectric constant $\mathcal{E} = \langle\mathcal{E}\rangle + \delta\mathcal{E}$ over an
             ideally conducting plane is calculated. It is assumed that the
             medium over the surface is statistically homogeneous, and that
             $\langle\mathcal{E}\rangle$ and $\langle\delta\mathcal{E}^2\rangle$ do not depend on time and on the coordinates.
             The problem is restricted to large-scale fluctuations, i.e.
             the correlation radius is large as compared with the wave
             length. For a complete statistic description of the field, the
             mean value of the field and the mean square of the fluctuation
             components must be found. In a limited medium, the fluctuations
             grow near the interference minimum of the field components.
             The theoretical results obtained in the consideration of the
Card 1/3   problem described are further dealt with. On the basis of the

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Maxwell equation and neglecting polarization corrections, the
Maxwell equation is transformed into $\Delta \vec{E} + k^2(\vec{E} + \langle \xi \, \delta\varepsilon \rangle) =$
$= -p\delta(\vec{r}-\vec{r}_0)$, (2). This method of statistic description was
developed in the papers by Lifshits and collaborators (Ref 2).
A solution is found which shows that at a sufficiently large
distance from the source the distribution of the components ξ
is normal at any distribution law of $\delta\varepsilon$. In equation (2), $\vec{E}$
denotes the regular and ξ the fluctuation components, $k=\omega/c$,
$\vec{p}=4\pi k^2\vec{d}$. At a distance $L \gg kl^2$ from the interference minimum,
the distribution of the phase and amplitude is a Gaussian
distribution, near the minimum it is a distribution according
to the law by Rayleigh. The conditions obtained mean that for
a complete statistic description of the electromagnetic field
it is sufficient to find the mean (regular) field and the mean
square value of the fluctuations $\xi_{\pm}(\vec{r})=k^2\int d\vec{r}'\,\varphi_{\pm}(\vec{r},\vec{r}')E_{\pm}(\vec{r}')\delta\varepsilon(\vec{r}')$
$z > 0$

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for each field component. There are 3 references, 2 of which are Soviet.

ASSOCIATION: Institut radiofiziki i elektroniki Akademii nauk SSSR (Institute of Radiophysics and Electronics of the Academy of Sciences, USSR)

PRESENTED: April 8, 1959, by M. A. Leontovich, Academician

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KANER, E.A.

Theory of the absorption of ultrasonic waves by metals in a strong
magnetic field. Part 1. Zhur. eksp. i teor. fiz. 38 no.1:212-218
Jan '60.   (MIRA 14:9)

1. Institut radiofiziki i elektroniki AN Ukrainskoy SSR.
            (Ultrasonic waves) (Magnetic fields)

KANER, E.A.

S/056/60/039/01/13/029
B006/B070

AUTHORS: Azbel', M. Ya., Kaner, E. A.

TITLE: The Problem of the Experimental Investigation of Cyclotron
             Resonance in Metals

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
             Vol. 39, No. 1 (7), pp. 80-87

TEXT: Up to now cyclotron resonance has been experimentally observed in
seven metals: tin, lead, indium, bismuth (and its compounds with tin
and thallium), copper, zinc, and aluminum. On this subject there exist
many experimental and theoretical works. The aim of the present paper is
to discuss the data in these publications and to compare them with the
theoretical predictions. Some further possibilities of experimentally
investigating cyclotron resonance in metals are also mentioned. The
general theory of the effect is then given, and the determination of
the effective carrier mass, the form of the resonance curve, and the law
of dispersion are briefly dealt with. In the following, experimental facts
are compared with theoretical predictions. The theoretically predicted

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high sensitivity of the effect, and the parallelism of the constant
magnetic field to the surface of the sample could in all cases be
experimentally verified. For Zn, Sn, Cu, and Al a large number of
harmonics could be established. dR/dH and not R(H) is often experimental- $\sqrt{B}$
ly measured. The peculiarities of this method of measuring the field
dependence of resistance are discussed and the curves R = f(H) and
dR/dH = f(H) for a quadratic (Fig. 1) as well as a non quadratic
(Fig. 2) law of dispersion are considered. Further, the determination
of the resonance frequency by absorption minimum as well as by the
maximum of its derivative with respect to H is discussed. The expression
for the resonance surface resistance R_{res}, the derivative $(dR/dH)_{res}$,
and the relative displacement of the minimum of R and maximum of
dR/dH for a quadratic law of dispersion $m(p_z)$ = constant, a non quadratic
law with $m(p_z)$ = minimum, and a non quadratic law with $m(p_z)$ = maximum
are given in a table. The anisotropy of the curves in the resonance
region is considered and the dependence of the height of the maximum on
the magnitude of the field strength is investigated for a quadratic
dispersion law, as well as in the general case, and the experimental

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results are compared with the theoretical ones. It is then pointed out
that the dependence of absorption on the direction of polarization of
a variable electric field, when the direction of $\vec{H}$ is kept constant,
has not yet been investigated. A few problems concerning Fermi surface
are discussed, and it is shown that the solution given in Refs. 17 and 18
for the equation of motion of the electron in a magnetic field parallel
to the metal surface does not satisfy the boundary conditions. In
conclusion, the authors thank A. P. Kip, D. N. Langenberg, E. Fawcett
and I. Phillips for making available the preprints before publication.
P. A. Bezuglyy, A. A. Galkin, M. S. Khaykin, N. Ye. Alekseyevskiy and
Yu. P. Gaydukov are mentioned. There are 2 figures, 1 table, and 37 ref-
erences: 17 Soviet, 15 American, 3 British, and 1 Canadian.

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR
             (Physicotechnical Institute of the Academy of Sciences
             of the Ukrainskaya SSR)

SUBMITTED: December 16, 1959

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S/056/60/039/004/033/048
B006/B063

AUTHOR: Kaner, E. A.

TITLE: Theory of Absorption of Ultrasonic Waves by Metals in a
            Strong Magnetic Field. II

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,
            Vol. 39, No. 4(10), pp. 1071 - 1077

TEXT: A theory of magnetic absorption of ultrasonic waves by metals at
low temperatures and the effect of the non-monotonic relationship between
absorption coefficient and magnetic field in the range $\lambda \le r \ll 1$ ($2\pi\lambda$ is the
sound wavelength; r and l are the orbital radius and the free path of the
electron, respectively) formed the subject of Part I of the present paper
(Ref. 1), as well as of papers by V. L. Gurevich and by the author jointly
with A. A. Galkin. Refs. 1 and 3 dealt only with the region of strong
fields with $r \ll \lambda$. Following Ref. 1, the author now studies the asymptotic
absorption of ultrasonic waves by metals with an open Fermi surface
(especially those of the type of the "spatial network"), which are placed
in strong magnetic fields. It is shown that the deformation absorption

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Theory of Absorption of Ultrasonic Waves by   S/056/60/039/004/033/048
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coefficient is saturated, irrespective of the existence of open
trajectories. There exists a marked anisotropy of saturation which depends
on a function of the position of the sound-wave vector with respect to the
magnetic field vector and the direction of the open trajectory. The
particular phenomena occurring in inductive absorption of ultrasonic waves
in the presence of open Fermi surfaces are studied, and the asymptotic
value of the conductivity tensor in a magnetic field is calculated by
taking into account spatial dispersion. First, general formulas are given
for the absorption coefficient (Section 2); the asymptotic deformation
absorption in strong fields is briefly discussed, and the following three
special cases are described in detail: $\vec{k}\vec{v}\equiv 0$; $\vec{k}\vec{v} \neq 0$, but may vanish at
certain values of p_z; $\vec{k}\vec{v}$ never vanishes (Section 3). The asymptotic

behavior of the σ-tensor and the deformation current are described in
section 4. Finally, the anisotropy of absorption in a strong magnetic
field is studied for the following special cases: a) The wave vector is
parallel to the direction of the open trajectories; b) $\vec{k}$ is perpendicular
to $\vec{H}$; c) $\vec{k}$ lies in the xz-plane; d) the direction of $\vec{k}$ is arbitrary
(Section 5). A comparison between theory and experiment will be given in a

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